

IN THE CLAIMS:

The status of each claim that has been introduced in the above-referenced application is identified in the ensuing listing of the claims. This listing of the claims replaces all previously submitted claims listings.

1. (Currently Amended) A video imaging system, comprising:
a field emission array including:
a p-type substrate comprising an image detection surface;
an n-well recessed in ~~said~~the p-type substrate;
a diffusion region between ~~said~~the p-type substrate and ~~said~~the n-well;
at least one emitter tip disposed in communication with ~~said~~the n-well;
a capacitor, a first side of which is in communication with ~~said~~the n-well;
a baseline potential transistor in communication with a second side of ~~said~~the capacitor;
and
a signal transmission transistor in communication with ~~said~~the second side of the
capacitor;
an image signal detector associated with ~~said~~the signal transmission transistor; and
an extraction grid disposed over ~~said~~the field emission array and including at least one aperture
therethrough located substantially over ~~said~~the at least one emitter tip.
2. (Currently Amended) The video imaging system of claim 1, further comprising a
cathodo-luminescent display disposed substantially parallel to and spaced apart from ~~said~~the
extraction grid and including at least one display pixel corresponding to ~~said~~the at least one
emitter tip.
3. (Currently Amended) The video imaging system of claim 1, wherein ~~said~~the
baseline potential transistor and ~~said~~the signal transmission transistor share a common drain.

4. (Currently Amended) The video imaging system of claim 1, wherein a distance between ~~said~~the image detection surface and ~~said~~the n-well facilitates detection of electromagnetic radiation of a near infrared wavelength.

5. (Currently Amended) The video imaging system of claim 1, wherein a distance between ~~said~~the image detection surface and ~~said~~the n-well facilitates detection of electromagnetic radiation of a visible wavelength.

6. (Currently Amended) The video imaging system of claim 1, wherein ~~said~~the image signal detector is in communication with a source node of ~~said~~the signal transmission transistor.

7. (Currently Amended) The video imaging system of claim 1, further comprising a shutter component.

8. (Currently Amended) The video imaging system of claim 7, wherein ~~said~~the shutter component is configured to prevent electromagnetic radiation from impinging ~~said~~the n-well.

9. (Currently Amended) The video imaging system of claim 1, wherein ~~said~~the diffusion region is located proximate to ~~said~~the image detection surface and further comprising a layer of detection enhancement material adjacent ~~said~~the image detection surface.

10. (Currently Amended) The video imaging system of claim 9, wherein ~~said~~the detection enhancement material comprises a platinum silicide.

11. (Currently Amended) The video imaging system of claim 1, wherein ~~said~~the p-type substrate and ~~said~~the n-well each comprise a detection enhancement material.

12. (Currently Amended) The video imaging system of claim 11, wherein ~~said~~the detection enhancement material comprises a mercury-cadmium-tellurium alloy.

13. (Currently Amended) An image detection apparatus, comprising:
a p-type substrate comprising an emission surface, an array of n-type wells disposed in ~~said~~the p-type substrate substantially along a plane proximate ~~said~~the emission surface, a p-n junction between ~~said~~the p-type substrate and each n-well of ~~said~~the array ~~on~~of n-type wells, and an image detection surface opposite ~~said~~the emission surface;
an array of emission pixels, each comprising at least one emitter tip protruding from ~~said~~the emission surface and in communication with a corresponding n-well of ~~said~~the array of n-type wells;
a capacitor in communication with selected n-wells of ~~said~~the array of n-type wells;
a signal transmission transistor in communication with ~~said~~the capacitor;
a baseline potential transistor in communication with ~~said~~the capacitor; and
an image signal detector in communication with ~~said~~the signal transmission transistor.

14. (Currently Amended) The apparatus of claim 13, wherein ~~said~~the signal transmission transistor and ~~said~~the baseline potential transistor share a drain node.

15. (Currently Amended) The apparatus of claim 13, wherein ~~said~~the image signal detector communicates with a source node of ~~said~~the signal transmission transistor.

16. (Original) The apparatus of claim 13, further comprising a shutter.

17. (Currently Amended) The apparatus of claim 16, wherein ~~said~~the shutter prevents electromagnetic radiation from penetrating selected ~~n-wells~~n-well of ~~said~~the array of n-type wells.

18. (Currently Amended) The apparatus of claim 16, wherein ~~said~~the shutter is positionable over a selected region of ~~said~~the image detection surface.

19. (Currently Amended) The apparatus of claim 13, wherein a distance between ~~said~~the image detection surface and an n-well of ~~said~~the array of n-type wells facilitates impingement of ~~said~~the p-n junction by electromagnetic radiation of an infrared or a near infrared wavelength.

20. (Currently Amended) The apparatus of claim 13, wherein a distance between ~~said~~the image detection surface and an n-well of ~~said~~the array of n-wells facilitates impingement of ~~said~~the p-n junction by electromagnetic radiation of a visible wavelength.

21. (Currently Amended) The apparatus of claim 13, further comprising a display disposed adjacent, substantially parallel to, and spaced apart from ~~said~~the emission surface.

22. (Currently Amended) The apparatus of claim 21, wherein ~~said~~the display comprises an array of display pixels, each display pixel of which corresponds substantially to at least one emission pixel of ~~said~~the array of emission pixels.

23. (Currently Amended) The apparatus of claim 21, wherein ~~said~~the display comprises a cathodo-luminescent display.

24. (Currently Amended) The apparatus of claim 13, wherein ~~said~~the p-n junction is located proximate to ~~said~~the image detection surface, ~~said~~the apparatus further comprising a layer of detection enhancement material adjacent ~~said~~the image detection surface.

25. (Currently Amended) The apparatus of claim 24, wherein ~~said~~the detection enhancement material comprises a platinum silicide.

26. (Currently Amended) The apparatus of claim 13, ~~said~~the p-type substrate and ~~said~~the array of n-type wells each comprise a detection enhancement material.

27. (Currently Amended) The apparatus of claim 26, wherein ~~said~~the detection enhancement material comprises a mercury-cadmium-tellurium alloy.

28-47 (Canceled)